

DE PLANTIS TOXICARIIS E MUNDO  
NOVO TROPICALE COMMENTATIONES XIII

NOTES ON POISONOUS OR MEDICINAL MALPIGHIACEOUS  
SPECIES OF THE AMAZON

BY

RICHARD EVANS SCHULTES

This paper is offered in continuation of a series presenting ethnopharmacological observations made in the northwest Amazon. The malpighiaceous species enumerated in the following pages—all apparently unstudied from the phytochemical and pharmacological points of view—have been found to have interesting applications amongst the Indians of the region.

The identifications of the voucher specimens were made by Dr. José Cuatrecasas of the Smithsonian Institution and are cited and described in his monograph of Colombian Malpighiaceae which appeared in *Webbia* 13 (1958) 343–664. The drawings herein produced were prepared by Mr. Joshua B. Clark.

The ethnopharmacological observations were made by the writer in the Amazonian basin of Colombia between 1941 and 1954. They are offered in the hope of stimulating research to discover new biodynamic principles or to find new potentially valuable medicinal plants. Research along these lines is especially needed for this family of 60 genera and more than 880 species which has recently been described as “scarcely touched, chemotaxo-

nomically speaking". (Gibbs, R.D. "Chemotaxonomy of Flowering Plants" 3 (1974) 1676-1677.)

The best known members, from the point of view of their phytochemistry, are undoubtedly the several closely allied species of *Banisteriopsis*—*B. Caapi*, *B. inebrians*, *B. Rusbyana*—employed in northern South America in elaborating the narcotic drink known variously as *ayahuasca*, *caapi*, *natema*, *pinde* and *yajé*. These species contain psychoactive alkaloids—the first two,  $\beta$ -carboline alkaloids; the third, N,N-dimethyltryptamine (Deulofeu, V. "Chemical Compounds Isolated from *Banisteriopsis* and Relative Species" in [Ed. D. Efron] "Ethnopharmacologic Search for Psychoactive Drugs" Public Health Service Publ. No. 1645, Washington, D.C. (1967) 393-402).

One hundred and twenty-five years ago, when Spruce collected the type material of *Banisteriopsis Caapi* and described its narcotic use in the northwest Amazon of Brazil, he despatched material for chemical analysis—material which was not analyzed until 1968 (Schultes, R.E., B. Holmstedt and J.-E. Lindgren "De Plantis Toxicariis e Mundo Novo Tropicale III. Phytochemical Examination of Spruce's Original Collection of *Banisteriopsis Caapi*" in Bot. Mus. Leaflet Harvard Univ. 22 (1969) 121-132). Spruce was struck by the presence in this family of such a potent narcotic. In 1852, he wrote: ". . . . I saw, not without surprise, that it belonged to the order Malpighiaceae and the genus *Banisteria*, of which I made it out to be an undescribed species. . . . My surprise arose from the fact that there was no narcotic Malpighiad on record, nor indeed any species of that order with strong medicinal properties of any kind. . . . The seed [of *Bunchosia*] is described in books as poisonous, and if it be really so, then it is the only instance, so far as I know, of the existence of any hurtful principle

in the entire family of Malpighiads, always excepting that of the Caapi. Yet strong poisons may lurk undiscovered in many others of the order, which is very large . . . ." (Spruce, R. [Ed. A.R. Wallace] "Notes of a Botanist on the Amazon and Andes" 2 (1908) 421-422).

**Banisteriopsis Martiniana** (*Juss.*) *Cuatrecasas* var. **laevis** *Cuatrecasas* in *Webbia* 13 (1958) 502.

COLOMBIA: Comisaría del Amazonas, Vaupés, Río Apaporis, Raudal de Jirijirimo. *H. García-Barriga* 13706.—Same locality. November 25, 1951. *R. E. Schultes et I. Cabrera* 14569.—Comisaría del Amazonas, Río Apaporis, Soratama. August 20, 1951. *Schultes et Cabrera* 13615.

*García-Barriga* (*Flora Medicinal de Colombia* 2 (1975) 69) has recently reported that *Banisteriopsis Martiniana* var. *laevis* may be used by the Makuna Indians of the middle Apaporis as one source of the narcotic preparation yajé.

**Heteropteris riparia** *Cuatrecasas* in *Webbia* 13 (1958) 483.

COLOMBIA: Comisaría del Putumayo, Río Putumayo, Puerto Ospina. Alt. 300 m. "Extensive liana along river's edge." July 1942. *R. E. Schultes* 4029.—Comisaría del Vaupés, Río Apaporis, Raudal de Jirijirimo. Alt. 250 m. June 12, 1951. *R. E. Schultes et I. Cabrera* 12428.—Comisaría del Amazonas, Río Apaporis, Soratama. June 18, 1951. *Schultes et Cabrera* 12654.—Comisaría del Vaupés, Río Apaporis, Jinogojé (near mouth of Río Piraparaná). Alt. 260 m. "Vine. Flowers yellow." June 5, 1952. *Schultes et Cabrera* 16591.—Same locality. June 8, 1952. *Schultes et Cabrera* 16665.

The bark of this extensive liana is reported in these widely separated localities to be extremely poisonous, but the Indians in the middle Apaporis rasp the bark and prepare a tea which is employed internally in the treatment of gonorrhoea. The Makuna name on the Río Apaporis is *mee-see-gaw*.

Saponins, tannins and phenolic acids have been reported from the genus *Heteropteris* (Gibbs, loc. cit.).

***Heteropteris macrostachya* A. Jussieu** Malpigh.  
Synop. (1840) 275.

COLOMBIA: Comisaría del Amazonas, Río Apaporis, Soratama. Alt. 250 m. "Bejuco; hojas doradas envés; flores amarillas. Nombre en lengua 'geral' *capitariiva*." August 16, 1951. *R. E. Schultes et I. Cabrera 13533*.

The seeds of *Heteropteris macrostachya* are reputedly taken in a tea by the Taiwano Indians of the Río Kananari to treat diarrhoea.

It may be significant that the seeds of *Heteropteris suberosa* Griseb., commonly called *sarabatucú*, are similarly employed on the Río Mauhés in the central Amazon of Brazil (Le Cointe, P.: "A Amazonia Brasileira" 3 (1934) 406).

A collection of *Heteropteris macrostachya* from Panamá (*I. M. Johnston 1377*) bears an annotation that the plant is "toxic".

***Hiraea apaporiensis* Cuatrecasas** Webbia 13 (1958)  
404.

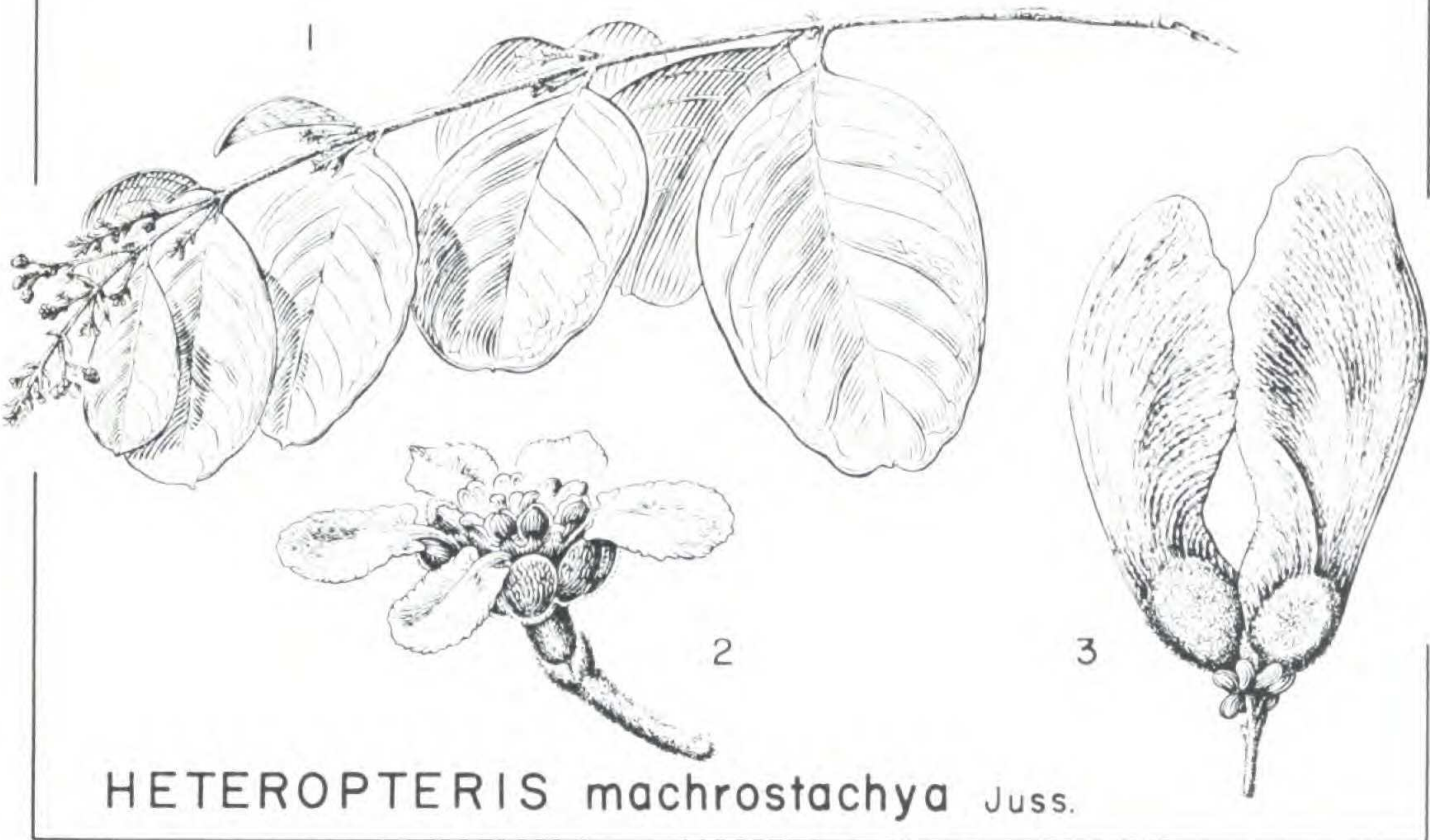
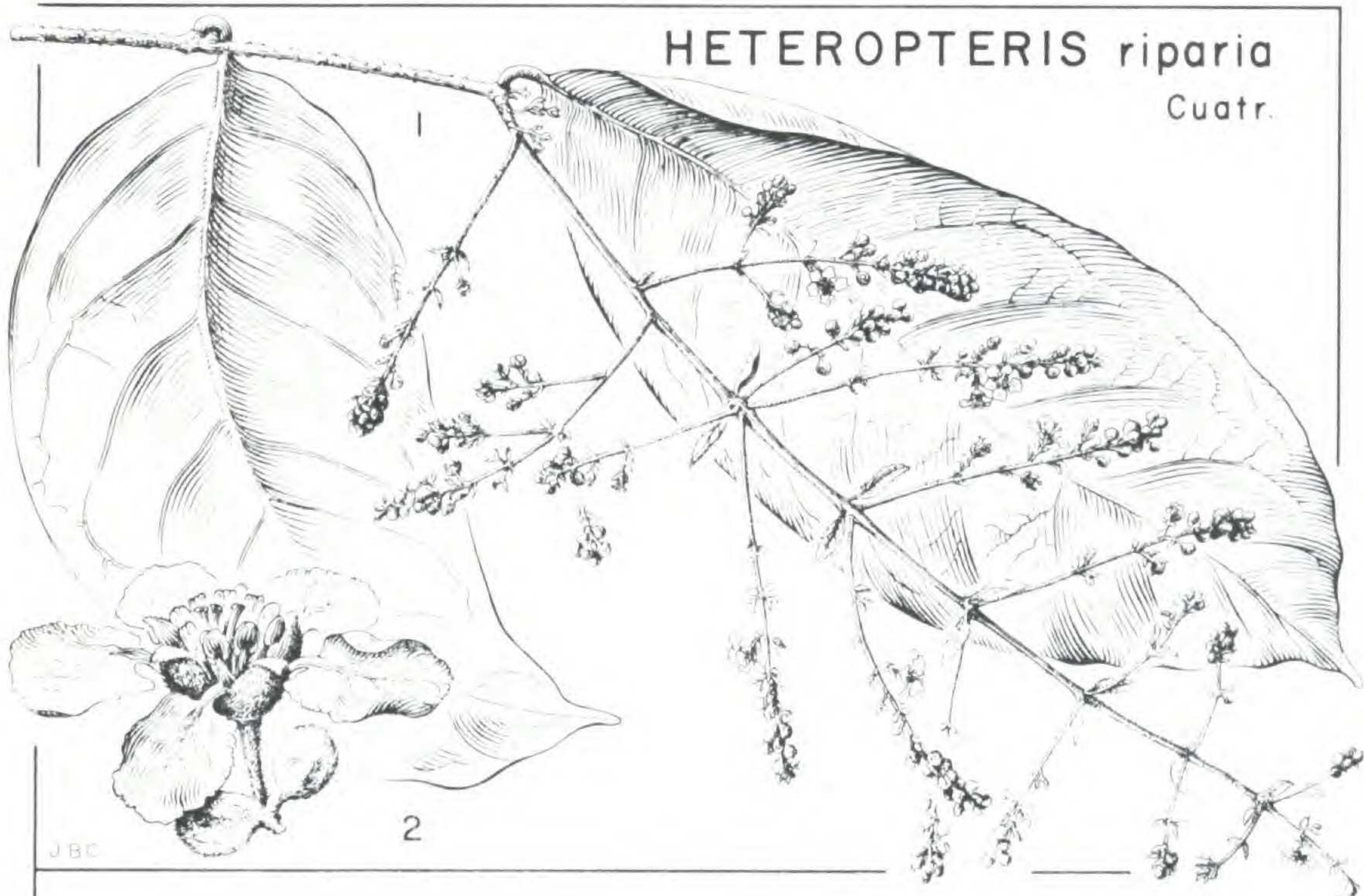
COLOMBIA: Comisaría del Vaupés, Río Apaporis, Raudal Yayacopi (La Playa). August 18, 1952. *R. E. Schultes et I. Cabrera 16969*.—Jinogojé (near mouth of Río Piraparaná). August 25, 1952. *Schultes et Cabrera 17022*.—Comisaría del Vaupés, Río Piraparaná. August 1952. *H. García Barriga 14215*.

The Maku Indians, who know *Hiraea apaporiensis* as *yé-aing*, employ a tea prepared from the leaves which is valued in the treatment of conjunctivitis.

***Hiraea Schultesii* Cuatrecasas** Webbia 13 (1958)  
403.

COLOMBIA: Comisaría del Vaupés, Río Apaporis, Raudal Yayacopi (La Playa). March 16, 1952. *R. E. Schultes et I. Cabrera 15996*.

A wash of the leaves of *Hiraea Schultesii* is valued by the Makuna Indians of the middle Apaporis in treating severe conjunctivitis.



**Mascagnia glandulifera** *Cuatrecasas* *Webbia* 13 (1958) 365.

COLOMBIA: Comisaria del Amazonas, Río Apaporis, Soratama. July 31, 1951. *R. E. Schultes et I. Cabrera 13208*.—Same locality. August 16, 1951. *Schultes et Cabrera 13594*.

A poultice of crushed and boiled leaves of *Mascagnia glandulifera* is commonly applied to boils and similar infections by Indians of the middle Apaporis.

Saponins have been reported from a species of this genus (Gibbs loc. cit.).

**Mezia includens** (*Benth.*) *Cuatrecasas* in *Webbia* 13 (1958) 450.

COLOMBIA: Comisaria del Vaupés, Río Apaporis, Jinogojé (at mouth of Río Piraparaná) and vicinity. "Vine. Flowers bright yellow." *R. E. Schultes et I. Cabrera 15691*.

This vine represents one of the medicinal plants with most uses amongst the Makuna Indians of the middle Apaporis. It is unusual that this should be so, in view of the relative scarcity of the plant.

The bark, which contains apparently high concentrations of tannin, is prepared in an infusion which is taken warm in large quantities to treat urinary troubles and to provoke urination. Perhaps because of its diuretic properties, it is employed in the form of a tea in cases of swollen legs—obviously edemas due to age and circulatory ailments.

The root is considered a strong laxative: it is crushed and soaked together with water in which *farina* (the flour prepared from *Manihot esculenta* has been setting for several hours.

The leaves, boiled for long periods into a tea, provide a strong emetic drink. They are also considered, when applied over the abdomen in the form of a cataplasm, a help in the treatment of what appears to be jaundice.

The Makuna Indians call this vine *ce'-taw-gaw*.

HIRAEA apaporiensis Cuatr.



**Tetrapteris mucronata** *Cavanilles* Diss. 9 (1790) 434, t. 262.

COLOMBIA: Comisaría del Amazonas, Río Apaporis, Soratama. June 15, 1951. *R. E. Schultes et I. Cabrera* 12554.—Comisaría del Vaupés, Río Apaporis, mouth of Río Pacoa. June 15, 1951. *Schultes et Cabrera* 13559.—Río Apaporis, Jinogojé (near mouth of Río Piraparaná). June 20, 1952. *Schultes et Cabrera* 16771.

The natives of the lower Río Piraparaná prepare a weak type of curare by boiling together for four or five hours the bark of *Tetrapteris mucronata* and of *Strychnos Erichsonii* R. Schomb. (*Schultes et Cabrera* 16770).

*Tetrapteris mucronata* is said to be "employed by the Karaparana tribe in preparing yajé" (*Schultes et Cabrera* 12107). In this connection, it is of interest to note the report of the narcotic use of a species of *Tetrapteris*, *T. methystica* (*Schultes et Lopez* 10184), in the Rio Negro basin of Brazil (Schultes, R. E. in Bot. Mus. Leaflet, Harvard Univ. 16 (1954) 202-205).

**Tetrapteris silvatica** *Cuatrecasas* *Webbia* 13 (1958) 425.

COLOMBIA: Comisaría del Vaupés, Río Apaporis, Raudal Yayacopi (La Playa). August 18, 1952. *R. E. Schultes et I. Cabrera* 16960.

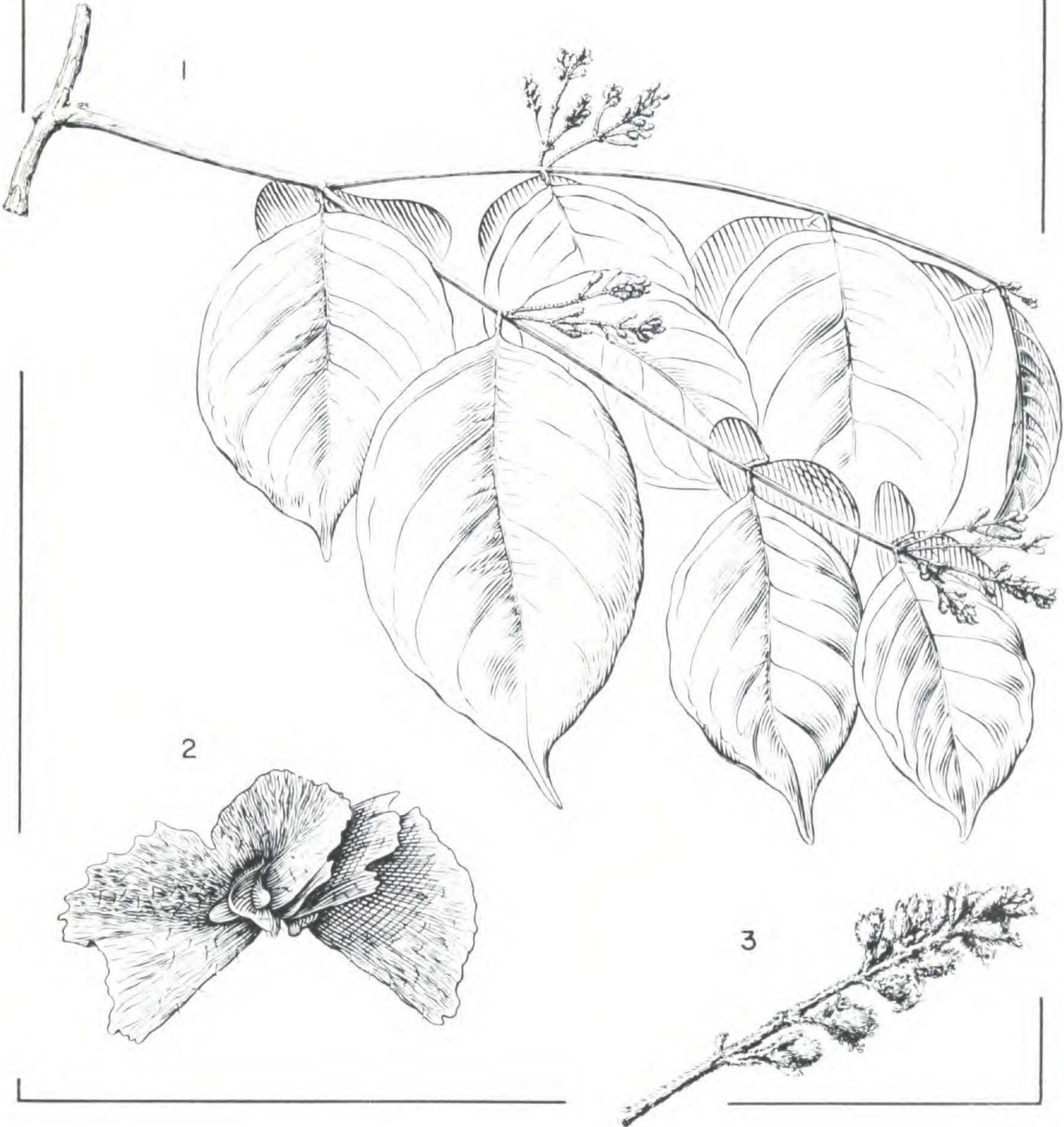
The leaves of *Tetrapteris silvatica* are burned by the Makuna Indians, and the ashes, mixed with any oil or grease, are applied to what appear to be fungal patches on the skin. The Makunas refer to this vine as *tee-mee-a-mee-see-ma* and recognize its very close relationship with the following species, *Tetrapteris styloptera*.

**Tetrapteris styloptera** *Jussieu* in Ann. Sci. Nat., ser. 2 Bot. 13 (1840) 262.

COLOMBIA: Comisaría del Amazonas, Río Igaraparaná, La Chorrera and vicinity. June 1942. *R. E. Schultes* 3914.—Same locality and date. *Schultes* 3927.—Río Apaporis, Soratama and vicinity. August 3, 1951. *R. E. Schultes et I. Cabrera* 12880.—Same locality. August



MASCAGNIA glandulifera Cuatr.

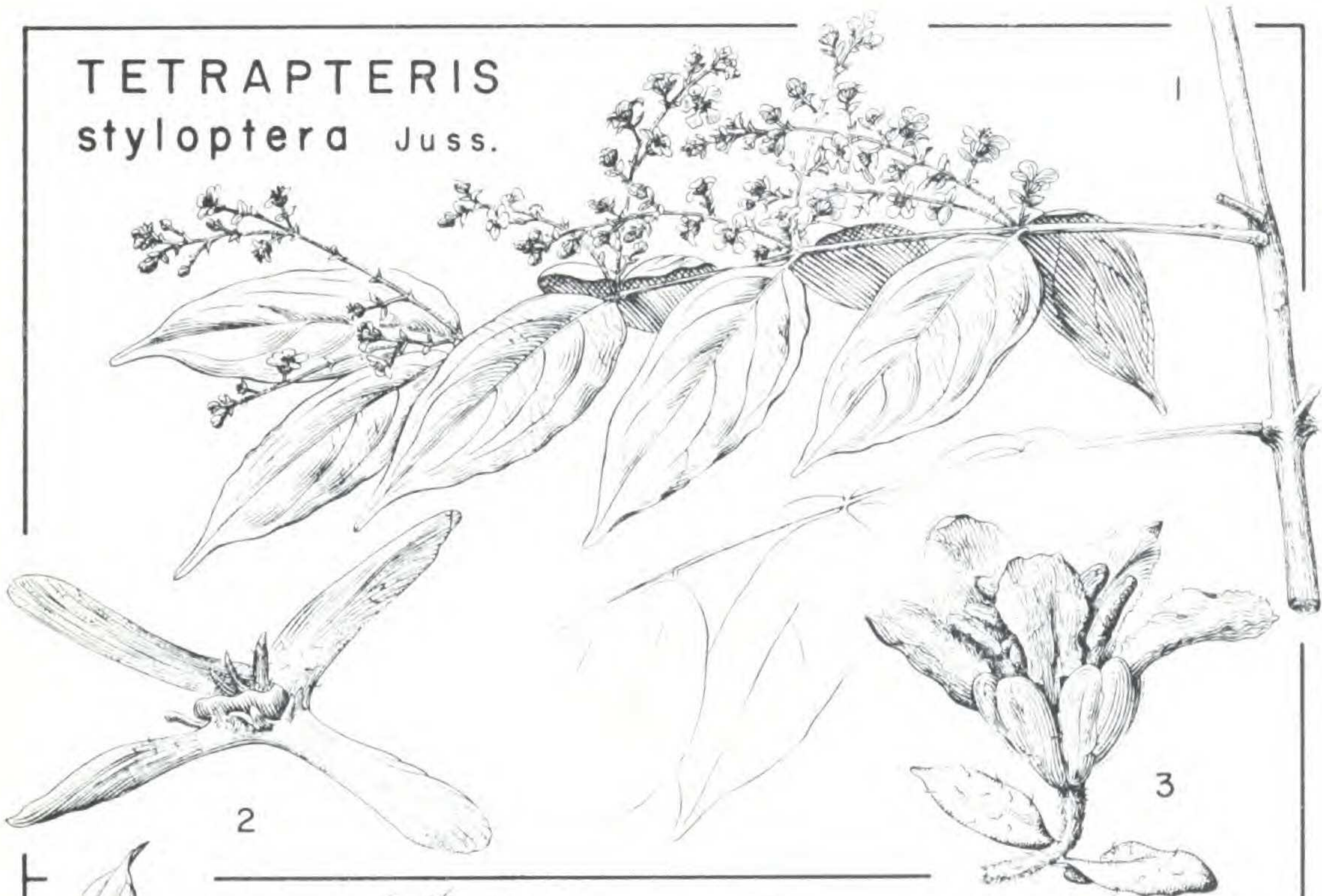


16, 1951. *Schultes et Cabrera 13573*.—Comisaría del Vaupés, Río Apaporis, mouth of Río Pacoa. June 17, 1951. *Schultes et Cabrera 12597*.—Jinogojé (near mouth of Río Piraparaná). June 5, 1952. *Schultes et Cabrera 16591*.—Same locality. June 8, 1952. *Schultes et Cabrera 16667*.—Same locality. June 20, 1952. *Schultes et Cabrera 16778*.—Same locality. September 20, 1952. *Schultes et Cabrera 17600*.—Raudal Yayacopi (La Playa). August 18, 1952. *Schultes et Cabrera 16953*.—Same locality and date. *Schultes et Cabrera 16961*.—Cachivera Jirijirima. November 1951. *H. García-Barriga 13700*.

The Tanimuka Indians on the Río Miritiparaná know this yellow-flowered vine as *wee-po-ark*. The bark is rasped and boiled to prepare an extremely bitter drink taken as a febrifuge.

Amongst the Makunas, the leaves, reduced to ashes, are applied to itching infections of the skin that may be due to fungal growth. The ashes are mixed with oil or fat for application. This vine is one of the most important medicines amongst the Makunas, who have three distinct names for it: *bee-ra-rec-a-ma*, *ho-rec-a-mee-see* and *nö-ñá'-mee-koo-ma*.

TETRAPTERIS  
*styloptera* Juss.



TETRAPTERIS  
*mucronata* Cav.

